

REMARKS

Claims 1-24 are all the claims that have been examined in the pending application. By this Amendment, Applicant is amending claims 1 and 23.

Claim Rejections under 35 U.S.C. § 103

1. *Claims 1, 2 and 9-24 are rejected under 35 U.S.C. § 103 (a) as being unpatentable over Perkins et al. (U.S. Patent No. 5,271,582, hereafter "Perkins") in view of Eninger et al. (U.S. Patent No. 5,036,905, hereafter "Eninger").* Applicant respectfully traverses this rejection on the following basis.

Claim 1 recites, in part, "at least one heat transfer means ... for transferring heat dissipated by the electronic module..." This particular clause is a means-plus-function clause, which must be interpreted under 35 U.S.C. § 112, paragraph 6. See *In re Donaldson*, 16 F.3d 1189 (Fed. Cir. 1994) (holding that the Examiner may not disregard the structure disclosed in the specification corresponding to such language when rendering a patentability determination). Base on one exemplary embodiment shown in Fig. 4, the heat transfer means can comprise a pipe *separate* from the transport line 29 of the heat transfer system and provided *within* the equipment 20 that houses a heat dissipating module. Such structure, together with the "connector means" (e.g., connector device 26) that selectively connects the heat transfer means to the heat transfer system, allows for the modular architecture of the thermal control system.

Perkins, on the other hand, discloses a conventional main heat transfer bus located within the body of a satellite, which dissipates heat from the ICUs and the digital subsystem through a radiator. Perkins does not teach or suggest any structure for the heat transfer system having modular equipment units with separate pipes dedicated to the dissipation of heat from modules

within the equipment units, let alone connections for selectively connecting the pipes within the equipment unit to a main line of the heat transfer system. In fact, Perkins simply states that the heat pipe disclosed is well known and understood by those of ordinary skill in the art (col. 9, lines 10-11). Because Perkins fails to disclose the structure of the recited “heat transfer means” and corresponding “connector means,” claim 1 is patentable over the applied art.

Claims 2, and 9-18 are patentable at least by virtue of their dependency from claim 1.

Claim 19 recites, in part:

a module fluid conduit that transfers the heat generated by the electronic module to the main fluid conduit via a fluid connection, and
a connector that couples said module fluid to the main fluid conduit, the connector structured to be decoupled from the main fluid conduit.

The Examiner argues that Perkins teaches these elements of claim 19. Applicant respectfully disagrees. Perkins teaches the use of an ammonia bus system which can be attached to the radiator. However, Perkins fails to teach a module fluid conduit connected to a main fluid conduit via a fluid connection. The ammonia bus system of Perkins is a main fluid conduit and is coupled directly to the radiator 24 via coupling 56 (see col. 9, lines 1-3). There is no teaching or suggestion that module fluid conduits exist, which then connect to the main fluid conduit. Thus, Perkins fails to teach or suggest all of the elements of claim 19. The Examiner further argues that Eninger cures the defects found in Perkins. However, Eninger also fails to teach that module fluid conduits transfer heat from an electronic module to a main fluid conduit. Thus, the applied references, even when taken in combination, fail to disclose all of the elements of claim 19. Claim 19 is patentable over the applied art.

Claims 20-24 are dependent upon claim 19. Because claim 19 is patentable over the applied references, taken individually or in combination, claims 20-24 are patentable at least by virtue of their dependency from claim 19.

Additionally, claim 22 is patentable because there is no motivation to combine Perkins al. and Eninger as set forth in the grounds of rejection. Perkins discloses that a main ammonia bus is connected by a connector to a radiator in order to dissipate heat. The Examiner asserts that there is a motivation to modify Perkins in view of Eninger, but the grounds of rejection fail to show where in the disclosure of the references there is an actual suggestion or motivation for the alleged motivation. *See* discussion of *In re Lee* in Applicant's last response; *see also In re Mills*, 916 F.2d 680, 682 (Fed. Cir. 1990). Perkins fails to suggest adding a locking device that shuts off the fluid connection between the ammonia bus and the radiator within the reference. Further, the shut off in Eninger has nothing to do with a shutting off a fluid connection between a module fluid conduit and a main fluid conduit. Even assuming for the sake of argument that one skilled in the art would have modified the heat transfer system disclosed in Perkins in view of the one disclosed in Eninger, at most such modification could have resulted in putting a valve at coupling 56 in Perkins. However, coupling 56 is not located between a module fluid conduit and a main fluid conduit, but connects an ammonia bus directly to a radiator. Therefore, because neither reference provides an actual suggestion or motivation for the combination asserted by the Examiner, claim 22 is patentable over the applied art.

Claim 23 is also patentable over the applied art. Claim 23, as amended, recites "said connector comprises an inlet connection and an outlet connection, wherein the connections are coupled to the main fluid conduit." Perkins teaches a connector between a main ammonia bus

and a radiator, but fails to teach that the connector comprises an inlet connection and outlet connection coupled to a main fluid conduit. Additionally, Eninger does not teach or suggest a connector that comprises an inlet connection and an outlet connection which are coupled to the main fluid conduit. Eninger fails to teach inlet and outlet connectors, as Eninger teaches one main fluid conduit only. Therefore, the applied references, whether taken individually or in combination with one another, fail to teach all of the necessary elements of claim 23. Claim 23 is patentable over the applied art.

Allowable Subject Matter

Claims 3-8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Applicant thanks the Examiner for indicating that claims 3-8 would be allowed if rewritten in independent form. However, Applicant respectfully requests that the Examiner hold in abeyance such rewriting until the Examiner has had an opportunity to reconsider (and withdraw) the prior art rejection of the other claims.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

Amendment under 37 C.F.R. § 1.111
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Respectfully submitted,



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